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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/986,446
Filing Date: November 08, 2001
Appellant(s): SCHNEIDER ET AL.

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GROUP 1700

Charles Guttman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 2/14/05.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellants state that all of the claims stand or fall together.

(8) *Claims Appealed*

Claims 21-23 contain(s) substantial errors (dependency on cancelled claims) as presented in the Appendix to the brief. Appellants submitted an amended claims list correcting the errors, which is appended to the Examiner's Answer.

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(9) Prior Art of Record

JP-07-207357	KITANO TAKAYUKI	01-1994
US 4,790,873	GESING et al	12-1988
US 4,113,241	DORE	09-1978
US 4,834,876	WALKER	05-1989

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 12, 13, 21, 24 and 22(12,13,19-21) {Claims 22 as it depends from claims 12, 13, and 19-21} and 23 (12,13,19-21) are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-207357 in view of Gesing et al (US 4,790,873).

JP teaches a device for filtering and adding grain refining material to metal melt comprising a first filter, a grain refining material feed downstream of the first filter and a second filter downstream of the first filter as in claim 12 (see abstract and specification); with the second filter a porous filter medium. However, JP-357 does not teach the second filter as a deep-bed filter. Gesing 873 teaches a deep bed filter as the second

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filter (see fig 7-9). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Gesing in the teaching of JP for the device for a metal melt because it would help trap and hold metal wettable inclusions, inline treatment, and for continuous operation (Gesing col 1 lines 7-19, col 4 lines 16-25, col 7 lines 1-10).

First filter can be a cake filter as in claim 13 (see specification of JP).

JP teaches a method of filtering, by filtering through a first filter, adding a grain refiner and then filtering through a second filter as in claim 24 (see abstract and specification)

Claims 21-23: JP teaches all the limitations of claim 12. Instant claims add further limitations which are not taught by JP, but taught by Gesing as follows:

Second filter is loosely filled as in claim 21 (see fig 7-9). Gesing teaches electrically heated filter as in claims 22(12,13, 19-21) and 23 (12,13, 19-21) (col 7 lines 7-10).

2. Claims 14-17, 22 (14-17) and 23 (14-17) are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (357) in view of Gesing et al (US 4,790,870) as in claim 12 above and further in view of Dore (US 4,113,241).

Claims 14-17 add further limitations of first filter being a ceramic foam plate, plate thickness and that it is being sintered. Dore teaches a sintered ceramic foam filter plate for metal melt filtration (abstract, col 6 lines 10-20). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Dore in the

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teaching of JP(357) in view of Gesing for more efficient filtration (Dore col 6 lines 21-34).

Gesing in view of Dore is not specific on the thicknesses of the filter elements as in instant claims 15 and 16 . However, it would be obvious to one of ordinary skill in the art at the time of invention to provide sufficient thickness to have enough strength without compromising on pressure drop. [Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955)].

Gesing teaches electrically heated filter as in claims 22(14-17) and 23 (14-17) (col 7 lines 7-10).

3. Claims 18, 22 (18) and 23 (18) are rejected under 35 U.S.C. 103(a) as being unpatentable over JP(357) in view of Gesing et al (US 4,790,870) as in claim 12 above and further in view of Walker (US4,834,876).

JP in view of Gesing teaches electrically heated filter (Gesing: col 7 lines 7-10) as in claims 22 (18) and 23 (18), but does not teach a CVD deposited material on the filters as in instant claim 18. Walker (876) teaches heated filter elements for metal melt filtration, with CVD metal deposition for resistance heating of the element (col 2 lines 12-15). It would be obvious to one of ordinary skill in the art at the time of invention to use the teachings of Walker (876) to configure the filter elements to be heated for the purpose of heating the filters as taught by Gesing.

(11) Response to Argument

Appellants stated that all the claims stand or fall together. The arguments are directed at both claim 12 and 24. However, claim 24 (independent) is for a process of filtering using the filter of claim 12. Since all the claims stand or fall together and claim 24 is only a process of use claim, this response is directed to claim 12.

Claim 12 recites a device for filtering and adding grain refining agents to a metal melt which comprises a porous first filter, a deep-bed second filter and a grain refining material feed in between. The device is claimed as having a flow direction from the first filter to the second filter, and the first filter is configured to operate as a cake filter.

Claim 12 was rejected under 35 USC 103(a) as obvious over the JP-357 reference in view of Gesing'873. Both references teach the two filter system with grain refining material provided in the middle. JP teaches a first filter that is configured to operate based on cake filtration (see paragraphs 8,10 and 11), a grain refining wire feed (para 12,16) and a second filter which is a tabular filter (para 16).

Gesing teaches two different embodiments (col 3 lines 2-15). The second embodiment teaches filtering molten metal with a non-metal wettable filter followed by a metal wettable filter (col 3 lines 14,15 and col 5 line 52 –55). The non-metal wettable filter can be tabular or bed-type (col 6 lines 26-40) which forms filter cake. Gesing teaches packed bed filter as preferred for the metal wettable filter (col 4 lines 16-24). Titanium boride grain refining material is used with the metal wettable filter as a middle layer (col 2 lines 49-55, col 3 lines 60-68; figures 7 and 8).

JP reference does not teach a bed filter for the second filter and Gesing reference does not teach a grain refiner feed. However the combination of the two references make a prima facie case of obviousness. Gesing ref provides the missing part, deep bed filter, of the JP reference. With regard to a motivation to combine, Gesing teaches filtering non-metallic and metal-wettable inclusions effectively (col 1 lines 7-18 and col 2 lines 57-63); the method is useful for in-line treatment, and to remove inclusions immediately before casting, and where low evolution of fumes is desired (col 1 lines 3-19). Another motivation to use the metal wettable filter (with packed bed as preferred) of Gesing is found in col 5 lines 55-68 – prevents accidental release of clustered inclusions during any surge in the metal flow. Thus Gesing reference provides sound motivations for combining the references.

Appellants' detailed arguments are addressed item-by-item below:

A. Appellants provide two arguments alleging that the office has used hind-sight reconstruction in rejecting the claims, which are addressed below:

(1) ...*the special and very effective arrangement of locating a cake filter before the grain refining material feed... the attendant advantage are nowhere disclosed or suggested in JP'357 or US'873.* (page 5, 2nd paragraph of the brief) [Italics added] In response, JP teaches this arrangement and spells out the advantages in paragraph 16. The mechanism of filtration is "surface filtration" or cake filtration – see JP paragraphs 10 and 11. Prima Facie Obviousness Is Not Rebutted by Merely Recognizing Additional

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Advantages or Latent Properties Present in the Prior Art. Mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention. In *re Wiseman*, 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) (Claims were directed to grooved carbon disc brakes wherein the grooves were provided to vent steam or vapor during a braking action. A prior art reference taught noncarbon disc brakes which were grooved for the purpose of cooling the faces of the braking members and eliminating dust. The court held the prior art references when combined would overcome the problems of dust and overheating solved by the prior art and would inherently overcome the steam or vapor cause of the problem relied upon for patentability by appellant. Granting a patent on the discovery of an unknown but inherent function (here venting steam or vapor) "would re-move from the public that which is in the public domain by virtue of its inclusion in, or obviousness from, the prior art." 596 F.2d at 1022, 201 USPQ at 661.); In *re Baxter Travenol Labs.*, 952 F.2d 388, 21 USPQ2d 1281 (Fed. Cir. 1991) (Appellant argued that the presence of DEHP as the plasticizer in a blood collection bag unexpectedly suppressed hemolysis and therefore rebutted any prima facie showing of obviousness, however the closest prior art utilizing a DEHP plasticized blood collection bag inherently achieved same result, although this fact was unknown in the prior art.)

(2) *A deep bed filter is inherently very effective and is not taught at all in JP'357* (page 5, 3rd para of brief) [Italics added]: The office action recognizes that JP does not teach a deep bed filter for the second filter. That is why the Gesing reference is used.

In both these arguments, appellants have failed to establish a hind-sight reasoning. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

B. Appellants allege that the references use totally different arrangements:

(1) ... *US'873 describes a totally different arrangement. ... these impurities or inclusions should not reach the first filter, because this would reduce the efficiency of the first filter* (para bridging pages 5 and 6 of the brief) [Italics added]: re the inclusions not reaching the first filter, problems associated with inclusions reaching the first filter is taught by the JP reference (paragraphs 14-16) [in re Wiseman].

(2) *US'873 teaches that even before the first filter, there exist metal wettable inclusions in the metal melt...*: (page 6 2nd para of brief) [Italics added]: this is not relevant because the reference is not used for this particular teaching, but for a totally different reason. With regard to the US'873 having two steps, and metal wettable inclusions in the metal melt, and adding borides (page 6, 2nd para of brief), these are process related; therefore not relevant to the issue: the claim is for a device and is open-ended. It may also be noted that molten aluminum would inherently have metal

wettable inclusions, as taught by both the JP (para 10-12) and Gesing references, at least from scrap or recycle in the melt.

(3) [Gesing '873] *Additionally, all inclusions ... metal wettable and non-wettable..are filtered by the second filter.* (page 6 2nd para of brief) [Italics added]: this is not entirely true: at least the second embodiment of the Gesing ref has the non-wettables filtered by the first filter, as previously shown. Moreover, this argument is also not relevant because the claim is for a device and is open-ended; Gesing ref is used for its teaching of the deep-bed filter; any additional advantage or feature of the deep bed filter or process steps taught by the ref does not preclude it as a reference.

(4) [Gesing'873] *...molten salt layer creates salt droplets..*(page 7 2nd para of brief) [Italics added]: Again, additional features in the secondary reference does not make it any less effective. Gesing is used for its teaching of the deep-bed filter.

(5) *JP'357 teaches that the second filter usually clogs very fast...That is why JP'357 discloses only cheap plate-filters are use as the second filters rather than more expensive deep-bed filters.* (para bridging pages 7 and 8 of brief) [Italics added]: The reason why JP uses a tabular filter as the second filter is because it is cheap and can be easily replaced (para 16). JP reference does not mention deep-bed filters, and that is why the rejection is based on obviousness. Had the JP reference specifically mentioned a deep bed filter as the Appellants allege, it would be anticipating claim 12.

The office recognizes that JP'537 does not teach a deep bed filter for the second filter. Therefore, the office used a secondary reference in combination. If it is implied that the appellants' motivation is different, the motivation for the use of the

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secondary reference may be different from that of the appellants'. The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Also, a teaching of preference based on cost is not teaching away and is not considered as a discouragement for combining the references. *In re Farrenkopf*, 713 F.2d 714, 219 USPQ 1 (Fed. Cir. 1983) (Prior art reference taught that addition of inhibitors to radioimmunoassay is the most convenient, but costliest solution to stability problem. The court held that the additional expense associated with the addition of inhibitors would not discourage one of ordinary skill in the art from seeking the convenience expected therefrom.).

Further in response to the argument that arrangements are different, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Thus, appellants' argument that the arrangements are different and therefore not combinable also failed to rebut the prima facie case of obviousness.

Further, with regard to the appellants' arguments on the references having additional elements, features or process steps: The transitional term "comprising" [in the claim], which is synonymous with "including," "containing," or "characterized by," is

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inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., > *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1368, 66 USPQ2d 1631, 1634 (Fed. Cir. 2003) ("The transition comprising' in a method claim indicates that the claim is open-ended and allows for additional steps.");< *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) ("comprising" leaves "the claim open for the inclusion of unspecified ingredients even in major amounts").

In summary, the arguments set-forth by the appellants are mostly not commensurate with the scope of the rejection or the claims, and attack the references individually. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Patent Examiner
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